

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1. (Currently Amended) A notification system embodied on a computer-readable storage medium, comprising:
 - an information herald that presents summarized notifications, each message having an assigned urgency value; and
 - an information controller that receives attentional inputs associated with a user and ~~constructs an attention model to~~ determines the user's current activity and focus of attention, the information controller dynamically generates the information herald on one or more display screens based at least in part on output generated from the attention model, the attention model analyzes a utility $u(D_i, A_j)$, capturing a cost of a user in an attentional state A_j being disrupted by a task or communication event D_i , wherein the information herald is dynamically located such that the distance of the herald's location from the user's focus of attention is a function of the urgency value and the user's determined activity.
2. (Currently Amended) The system of claim 1, the information controller receives inputs regarding user activities and employs one or more attention models to generate one or more dynamic outputs to control ~~information~~ how the information herald is provided to users at a workspace.
3. (Currently Amended) The system of claim 2, the information herald operates at various locations in the workspace and receives dynamically adjustable data from the information controller in order to ~~provide notifications to users in a non-distractive and unobtrusive manner~~ control the location and format of the information herald.

4. (Original) The system of claim 2, the information controller provides attention-sensitive placement and configuration of the information herald based on a user's activity via the attention models or other inputs about focus of visual attention including gaze and pose information.
5. (Currently Amended) The system of claim 1, the information controller removes the information herald after some threshold time or fades the information herald from view over time.
6. (Original) The system of claim 1, the information herald provides more detailed information when a user selects the information herald via an input command.
7. (Currently Amended) The system of claim 6, the input command includes at least one of a keystroke, mouse click, a mouse hover, ~~and~~ or voice command.
8. (Original) The system of claim 1, the information controller includes controls for timing out after a wait period, allowing users to continue to work with or without a glance at the information herald.
9. (Original) The system of claim 8, the information controller processes an implicit signal from users that they are not interested by information presented in the information herald without requiring an explicit user action.
10. (Currently Amended) The system of claim 1, the information controller includes at least one of a dynamic positioning control, a dynamic sizing control, a dynamic content control, a dynamic rendering control, a dynamic audio control, a dynamic timing control, ~~and~~ or a dynamic fading control.
11. (Currently Amended) The system of claim 10, the dynamic rendering control ~~is employed for changing~~ changes the appearance of the information herald or content therein based on the urgency value and the user's determined activity, the appearance including at least one of colors, shapes, ~~and~~ or fonts.

12. (Original) The system of claim 1, the information herald is dynamically adjusted to an iconic form based upon the summarized notification or an action by the user.
13. (Currently Amended) The system of claim 1, the summarized notifications include at least one of a line of message, a message chunk, ~~and~~ or a message outline.
14. (Cancelled)
15. (Original) The system of claim 1, the information herald is dynamically positioned based upon an automatically determined urgency value for a notification.
16. (Original) The system of claim 1, further comprising an audio herald that is controlled by the information controller using auditory cues that represent the urgency of an incoming message.
17. (Original) The system of claim 16, the information controller only uses the audio herald, or adds an audio cue when no user is detected.
18. (Currently Amended) The system of claim 1, the information controller employs a dwell time for display of the information herald ~~that can be shortened or lengthened~~ whose duration dynamically adjusts depending based on where the herald is being displayed at least one of the distance of the herald's display location from the user's focus of attention or the user's workload.
19. (Currently Amended) The system of claim 18, the information herald is appended to a herald journal or folder after a predetermined time, ~~that allows~~ the herald journal or folder allowing a user to inspect the information herald at a later time.
20. (Original) A computer readable medium having computer readable instructions stored thereon for implementing at least one of the information herald and the information controller of claim 1.

21. (Currently Amended) A system embodied on a computer-readable storage medium that facilitates message processing by a user, comprising:

means for automatically prioritizing a message;

means for summarizing the message;

means for determining a user's current focus of attention;

~~means for constructing an attention model that analyzes a utility, $u(D_i, A_j)$, capturing a cost of a user in an attentional state A_j being disrupted by a task or communication event D_i ;~~

~~means for dynamically locating the message in a user's workspace based at least in part on output generated from the attention model~~ such that the distance between the message location and the user's focus of attention decreases with increasing message priority.

22. (Original) The system of claim 21, further comprising means for analyzing the user's activities in order to dynamically locate the message.

23. (Currently Amended) A method for automatically notifying a user, comprising:

automatically determining an output region for a message;

automatically determining a priority for the message;

automatically placing the message in the output region;

automatically placing the output region in a default region of a workspace; and

~~constructing a model that infers a cost of different types of interruptions given that the user is of a particular attentional state;~~

~~using the model to analyze a utility, $u(D_i, A_j)$, capturing a cost of a user in an attentional state A_j being disrupted by a task or communication event D_i ; and~~

~~dynamically moving the output region~~ increasingly closer to the user's focus of attention based upon the user's detected activities and output from the model as the priority of the message increases.

24. (Cancelled)

25. (Currently Amended) The method of claim 24, further comprising automatically ~~moving~~ locating the output region based upon the priority.

26. (Currently Amended) The method of claim 24, further comprising automatically changing the appearance of the output region based upon at least one of the priority ~~and~~ or the user's detected activities.

27. (Currently Amended) The method of claim 23, further comprising automatically applying at least one control to dynamically change the output region, the at least one control associated with at least one of a position, a size, a content, an appearance, a sound, ~~and~~ or a time.

28. (Currently Amended) The method of claim 23, further comprising automatically summarizing the message prior to placing the message in the output region.

29. (Currently Amended) The method of claim 23, further comprising automatically moving content associated with the output region to an electronic journal for deferred review.

30. (Previously Presented) The method of claim 23, the detected activities are determined in accordance with the model.

31. (Currently Amended) The method of claim 30, the model processes at least one of[[,]] a location, a visual pose, a calendar, a time, an appointment status, an acoustical signal, an application in focus, an inspection interval, an application usage pattern, ~~and~~ or user device activity to determine an attentional focus of a user.

32. (Currently Amended) A method for controlling notifications to a user, comprising:
 monitoring a user's activities;
determining an attentional state of the user based on the user's activities;
determining the user's current focus of attention;
 constructing an attention model to analyze the user's activities, the attention model analyzes a utility, $u(D_i, A_j)$, capturing a cost of a user in an attentional state A_j being disrupted by a task or communication event D_i ; and
 dynamically placing information alerts within a workspace at a selected distance from the user's current focus of attention, the selected distance based at least in part on ~~output~~ the utility generated from the attention model.
33. (Cancelled)
34. (Cancelled)
35. (Previously Presented) The method of claim 32, the cost is assessed as a willingness to pay to avoid a disruption in dollars for a respective combination of disruptions.
36. (Previously Presented) The method of claim 32, further comprising computing an expected cost of interruption (ECI) by summing over utilities, weighted by a likelihood of respective states of attention, conditioned on a stream of incoming sensory information, wherein ECI is stated as:
- $$ECI = \sum_j p(A_j | E) u(D_i, A_j)$$
- wherein $p(A_j | E)$ is the probability of an attentional state, conditioned on an evidence stream E .

37. (Currently Amended) A method for controlling notifications to a user, comprising:
 monitoring a user's activities;
determining a focus of attention of the user based on the monitored activities;
~~analyzing a utility, $u(D_i, A_j)$, capturing a cost of the user in an attentional state A_j , being~~
~~disrupted by a task or communication event D_i , to infer a cost of different types of interruptions~~
~~given that the user is of a particular attentional state, the attentional state inferred from the~~
~~monitored activities;~~
 providing one or more user controls to guide a herald on a display, the user controls
allowing a user to configure preferences regarding how the herald is displayed;
determining a priority for a received herald;
dynamically controlling the display location of the received herald, wherein the distance
of the display location from the user's determined focus of attention is based at least in part on
the user's activities, the priority, and the preferences configured in the one or more user controls,
the preferences including at least a setting that allows a user to specify a herald priority level
below which a herald will remain at a periphery of the display.
38. (Currently Amended) The method of claim 37, further comprising providing an entry point into the user controls for the herald for ~~decisions about heralds including~~ configuring
policies regarding positioning and rendering of the heralds.
39. (Original) The method of claim 37, further comprising providing a particular region or button with the herald that allows entry into controls for adjustment in general or for the case at hand.
40. (Currently Amended) The method of claim 37, the one or more user controls ~~provided~~
~~[[as]]~~ comprise a rich control panel for specifying preferences about heralds.
41. (Original) The method of claim 37, further comprising controls for opening and closing complex structures associated with the herald.

42. (Original) The method of claim 37, the controls include general gestures that enables users to ignore the herald for a time period.

43. (Previously Presented) The method of claim 42, the controls are coupled with a “snooze” feature, allowing user to indicate a predetermined period for the herald to return.

44. (Currently Amended) The method of claim 37, the herald is dynamically positioned with respect to the user's determined focus of attention based upon an urgency associated with a message.

45. (Original) The method of claim 37, further comprising automatically providing a list of heralds that have been missed while a user has been detected to be away.

46. (Original) The method of claim 45, further comprising providing a time-out function based upon a determined importance of the heralds appearing in the list of herald.

47. (Original) The method of claim 46, further comprising sorting important heralds into a first folder and time-out heralds in a subsequent folder.

48. (Original) The method of claim 37, further comprising automatically analyzing spatial and temporal constraints that are based on a type of software application, a configuration of displayed information associated with the application, or current or recent specific interactions with application content.

49. (Original) The method of claim 48, the constraints are employed to ensure that a herald does not obfuscate important content or disrupt a current interaction and to minimize the disruptiveness of a rendering of the herald.

50. (Original) The method of claim 48, further comprising automatically positioning a keep out area over selected portions of a user's display or displays to ensure that a herald is not placed in a position that will overlay a position where a user is currently working.

51. (Original) The method of claim 50, further comprising processing a user's current activity and providing a brief temporal keep out area that is applied to delay a herald rendering.